

HEAT Framework

	HEAT Levels	Higher-Order Thinking	Engaged Learning	Authentic Learning	Technology Integration	
Lower-order Thinking	Level 0 Non-Use	✦ Lecture; Students ✦ Taking notes only ✦ No questions asked	✦ Teacher directed completely ✦ No student interaction	✦ No connection to real world	✦ No technology use is evident by students or teacher	Teacher-directed
	Level 1 Awareness	✦ Students learning at Remembering and Understanding level of Bloom's Taxonomy	✦ Students report facts they have learned on tests or questions posed by teacher ✦ One single correct answer	✦ Non-relevant problems using textbook/ worksheets ✦ Short one-method/one-answer problems	✦ Teacher uses technology for demonstration or lecture ✦ Minimal or no student technology use	
	Level 2 Application	✦ Students learning at Applying level of Bloom's Taxonomy ✦ Teacher questioning	✦ Students are engaged in a task or activity directed by the teacher ✦ Multiple solutions accepted	✦ Learning experiences use real world objects or topics and provide some application to real world	✦ Students technology use for lower-order thinking tasks	
Higher-order Thinking	Level 3 Exploration	✦ Students learning at an Analyzing, Evaluating, or Creating levels of Bloom's Taxonomy ✦ Teacher-directed questioning and instruction	✦ Student choice for projects or to solve a problem posed by teacher ✦ Students are engaged in projects based on preferred learning styles, interests or passions ✦ Multiple instructional strategies	✦ Learning may be relevant to the real world or the past ✦ Learning occurs in a simulated real-world situation such as a class store	✦ Technology use appears to be an add-on or alternative—not essential for task completion ✦ Technology is used for higher-order thinking tasks such as analysis and decision-making.	Student-directed
	Level 4 Integration	✦ Student-generated questions/projects at Analyzing, Evaluating, or Creating levels of Bloom's Taxonomy ✦ Multiple indicators of learning	✦ Students partner with the teacher to help define the task, process, and/or solution ✦ Problem solving based on student questions ✦ Students partner with other students to collaborate on learning projects	✦ The learning experience provides real world tasks which can be integrated across subject areas ✦ Learning has a classroom or school emphasis and impact	✦ Technology use is integrated and essential to task completion ✦ Technology use promotes collaboration among students for planning, implementing, and/or evaluating their work. ✦ Technology is used as a tool to help students identify and solve higher-order thinking, authentic problems relating to an overall theme/concept.	
	Level 5 Expansion	✦ Student learning/questioning at Analyzing, Evaluating, or Creating level of Bloom's Taxonomy ✦ Complex thinking involves extensive non-linear problem solving, decision making, experimental inquiry and investigation over time	✦ Students partner with the teacher to help define the task, the process, and/or the solution ✦ Students partner with local community/field experts on learning projects ✦ Opportunity to express different points of view ✦ Mutual feedback between teacher and student	✦ The learner experiences the real world and has opportunity to apply their learning to a real world current issue ✦ Authentic assessment; Access to expert thinking and modeling processes ✦ Learning has a local or community emphasis and makes a positive impact ✦ Student beginning to think like a field expert or discipline	✦ Technology use is directly connected to task completion involving one or more applications ✦ Technology extends the classroom by expanding student experiences and collaboration beyond the school to the local community. ✦ Technology supports collaboration, higher-order thinking, and productivity.	
	Level 6 Refinement	✦ Student learning/questioning at Analyzing, Evaluating, or Creating level of Bloom's Taxonomy ✦ Complex, open-ended learning environment	✦ Students partner with the teacher to help define the task, the process, and the solution ✦ Students partner with global experts on learning projects on global issues ✦ Student-designed problem-solving and issues resolution are the norm	✦ The learner experiences and makes a positive impact on real, global issues and events. ✦ Student produce products like a field expert ✦	✦ Technology use is directly connected and needed for task completion and students determine which application(s) would best address their needs ✦ Technology is a seamless tool used by students through their own initiative to find solutions related to an identified "real" global problem or issue of significance to them. ✦ Technology provides a seamless medium for information queries, problem solving, and/or product development.	

Guidance for Applying the HEAT Framework:

- Components H, E, and A are based on the student's interaction with the content, not the technology. Don't be overly impressed with the glitz of technology. If a student creates a multimedia presentation about facts on a topic, it is a level 2.
- Note the thick black line separating levels 3 and 4. The lower levels 0-3 are teacher-directed, and the higher levels 4-6 are more student-directed; i.e., students have more choices; they partner with other students, teachers, and outside experts in designing tasks, process, and solutions. In other words, they are more responsible for their own learning.
- Note the buff colored shading for levels 3 and 4. This indicates the target levels for teachers to provide consistent instruction. While a Level 3 is still teacher-directed, students are using higher-order thinking of Bloom's Taxonomy. Students are beginning to take more responsibility for their own learning in Level 4. Levels 5 and 6 could be attained after consistent learning at levels 3 and 4 and could be accomplished a few times a year.
- What is the difference between "relevant" and "real" learning? According to Prensky (2010) "relevant" means that students can
- relate something you are teaching, or you say, to something they know such as a recent film or TV show rather than an old classic or something less familiar to them. Relevant, for example, means taking readings from current newspapers rather than dated textbooks. "Real" means there is a perceived connection by the students between what they are learning and their ability to use that learning to do something useful in the world. Examples of *real* learning include measuring a company's carbon footprint and proposing how they can save money by going green, how did reading a book change your life, analyzing a tweet stream from Afghanistan and sending our own tweets, applying science concepts to change your family's eating or drinking habits, or improving the local drinking water.
- How much of a particular cell must be fulfilled to achieve the level? The primary determinants are the type of learning environment (Is the lesson primarily teacher-directed or student directed?) and the level of learning (lower-order thinking or higher-order thinking). Most of the indicators in a cell must be accomplished to rate at that level after it is determined if it is teacher-directed or student-directed and if it is lower- or higher-order thinking.

Revised January 2011

Moersch, C. (2002). Measures of success: Six instruments to assess teachers' use of Technology. *Learning & Leading with Technology*, 30(3), 10-18.

Prensky, M. (2010). *Teaching digital natives: Partnering for real learning*. Thousand Oaks, CA: Corwin.